REMARKS

Claims 1-23 were pending and considered. Claims 1-23 were rejected. Claim 5 has been amended to correct a typographical error. Claims 1-23 remain pending. Applicant respectfully requests that the Examiner considers the following remarks, reconsider the rejections and allow the claims.

Claims 1-4 have been rejected under the judicially created doctrine of obviousness-type double patenting, as being unpatentable over claims 1-21 of U.S. Patent 6,673,211. The present application was filed as a continuation of U.S. serial number 09/902,975. The '975 application issued as U.S. Patent 6,673,211 after the present application was filed. Accordingly, the present application is a continuation of U.S. Patent 6,673,211 upon which the double patenting rejection is based. Therefore, Applicant submits that the double patenting rejection is not proper and should be removed. To clarify the chain of applications, the present application has been amended to reference issued U.S. Patent 6,673,211 as the parent of the present application.

No other objections or rejections have been made against claims 1-4. With the removal of the double patenting rejection, it is respectfully submitted that claims 1-4 are now in condition for allowance. An indication of such is respectfully requested.

Claims 5-23 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-32 and 1-12 of U.S. Patents 6,413,365 and 6,458,241, respectively.

U.S. Patent 6,413,365 was filed July 11, 2001, the same date as the filing date of the parent of the present application. That is, U.S. Patent 6,673,211, the parent of this application, and U.S. Patent 6,413,365 were each filed on July 11, 2001. Therefore, U.S. Patent 6,413,365 is

not prior art with respect to the present application and the obviousness-type double patenting rejection based thereon should be removed.

Applicant respectfully traverses the obviousness-type double patenting rejection based on claims 1-12 of U.S. Patent 6,458,241. Independent claim 5 of the present application in part recites:

> **providing a rotor and stator assembly including a rotor and a stator defining a gap therebetween of between about 3 mm and 75 mm.;**
>
> **...;**
>
> **rotating the rotor during said passing step and controlling the rotational speed of the rotor to provide a tangential velocity of between about 20 and 100 meters per second.**

Independent claim 22 in part recites:

> **controlling the gap and rotational speed of the rotor to provide low shear treatment of the fibers.**

Applicant respectfully submits that that at least theses limitations in independent claims 5 and 22, also included in dependent claims 6-21 and 23, respectively, are not obvious from the invention recited in claims 1-12 of U.S. Patent 6,458,241. The specific method variations, including the above limitations, recited in the pending claims, are not suggested by method claims 1-12 of U.S. Patent 6,458,241, which do not contain limitations regarding the gap between the rotor and stator or the treatment intensity performed. Applicant submits that the obviousness-type double patenting rejection of claims 5-23 based on claims 1-12 of U.S. Patent 6,458,241 should be removed. An indication of such is respectfully requested.

Claims 5-23 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over RE 35,460 (Klungness et al.). In response, Applicant respectfully submits that, for the reasons stated below, independent claim 5 and independent claim 22, as filed, recite an invention not taught by

or obvious from Klungness et al. Accordingly, Applicant respectfully submits that claims 5-23 are in allowable form.

Klungness et al. teaches a fiber loading process using high shear mixing. Klungness et al. specifically teaches that high shear is required. For example, Klungness et al. states:

> It has been determined that for fibers containing from about 95% to about 85% of moisture (5% to 15% of fiber) and the same calcium oxide loading, that high shear treatment during contact with the carbon dioxide is required to cause complete precipitation of calcium carbonate. In this connection, any suitable high shear mixing device can be used. Preferably, the high shear treatment is sufficient to impart from about 10 to about 70 watt hours of energy per kilo of fiber, dry weight basis. (Klungness et al., column 6, lines 56-64. Emphasis added.)

Klungness et al. further states:

> It has been determined that a simple way to provide contact of the carbon dioxide with the paper pulp under high shear treatment is by means of a pressurized refiner (Klungness et al., column 6, lines 65-67. Emphasis added.)

Klungness et al. states that the pressurized refiner is "a well known piece of apparatus" having discs "spaced apart by a distance sufficient to shred the pulp crumbs as the pulp passes between the stationary disc and the revolving disc" (column 7, lines 1-13). Klungness et al. dismisses the use of low shear, stating, "The quality of hand sheets prepared from pulp wherein the precipitation is affected with the pressurized refiner is, however, superior." (column 7, lines 35-41).

It is clear from the above that Klungness et al. specifically teaches that high shear treatment of the pulp is required. In the example given in column 8 of Klungness et al., treatment of the fibers was such that the pulp was "refined in a carbon dioxide atmosphere" (column 8, lines 24-25). Refining fibers alters the physical properties of the fibers, which is consistent with the stated goal in Klungness et al that the refiner discs be "spaced apart by a distance sufficient to

shred the pulp crumbs as the pulp passes between the stationary disc and the revolving disc" (column 7, lines 1-13)

In contrast to the teaching of Klungness et al., claim 5 recites in part:

> **providing a rotor and stator assembly including a rotor and a stator defining a gap therebetween of between about 3 mm and 75 mm.;**
>
> **...;**
>
> **rotating the rotor during said passing step and controlling the rotational speed of the rotor to provide a tangential velocity of between about 20 and 100 meters per second.**

Applicant submits that such an invention is neither taught, disclosed nor suggested by Klungness et al., and the present invention has distinct advantages over the prior art.

Klungness et al. uses high energy to treat the fibers. The properties of the fibers are changed significantly through the input of energy. In the teaching of Klungness et al. actual fiber refining occurs. In a refined fiber the outer surface area is increased through defibrillation of the fiber. The fiber is refined to a specific length and thickness. The fiber water holding properties are changed through refining. All of these alter the properties of the final paper product made therefrom. Since Klungness et al. requires refining, the fiber loading process of Klungness et al. limits the final characteristics of a product made from the loaded fibers to those characteristics that result from refining. In contrast, the present invention allows loading of fibers without significantly impacting the aforementioned physical properties. Thus, the fibers can be treated to the degree desired for the final end product, independent of the process to load the fibers with calcium carbonate. Applicant respectfully submits that nothing in Klungness et al. teaches or suggests using a rotor and stator gap of between about 3 mm and about 75 mm as recited in claim 5, as originally filed. Nothing in Klungness et al. teaches or suggests rotating the rotor and controlling the speed thereof to provide a tangential velocity of between about 20 and 100 meters

per second. In short, nothing in the teaching of Klungness et al. teaches or suggests a low intensity, low energy input process, as recited in claim 5. Accordingly, Applicant respectfully submits that claim 5 recites an invention not taught by Klungness et al. and should be allowed.

Claims 6-21 depend directly or indirectly from claim 5 and include all of the limitations thereof. Since Applicant is of the opinion that claim 5 is allowable for the reasons stated above, Applicant further respectfully submits that claims 6-21 are also allowable. Further however, it is respectfully submitted that claims 6-12 recite further features of the invention not taught by Klungness et al. For example, claims 6, 8, 10, 18 and 20 recite rotor speeds not taught by Klungness et al. Claims 7, 9 and 19 recite more specifically the gap between the rotor and stator, which is not taught by Klungness et al. Additionally, other dependent claims recite temperatures, pH ranges, calcium hydroxide concentrations and the like in combination with the invention recited in claim 5. Accordingly, Applicant respectfully submits that each of the dependent claims is also allowable on its own merits.

In contrast to the teaching of Klungness et al., claim 22 as filed recites in part:

> **controlling the gap and rotational speed of the rotor to provide low shear treatment of the fibers.**

Applicant submits that such an invention is neither taught, disclosed nor suggested by Klungness et al., and the present invention has distinct advantages over the prior art.

Klungness et al. uses high energy to treat the fibers, stating that high shear is "required". The properties of the fibers are changed significantly through the input of energy. In the teaching of Klungness et al. actual fiber refining occurs. In a refined fiber the outer surface area is increased through defibrillation of the fiber. The fiber is refined to a specific length and thickness. The fiber water holding properties are changed through refining. All of these alter the properties of the final paper product made therefrom. Since Klungness et al. requires refining, the

fiber loading process of Klungness et al. limits the final characteristics of a product made from the loaded fibers to those characteristics that result from refining. In contrast, the present invention allows loading of fibers without significantly impacting the aforementioned physical properties. Thus, the fibers can be treated to the degree desired for the final end product, independent of the process to load the fibers with calcium carbonate. Applicant respectfully submits that nothing in Klungness et al. teaches or suggests controlling the gap and rotational speed of the rotor to provide low shear treatment of the fibers, as recited in claim 22. Accordingly, Applicant respectfully submits that independent claim 22, as filed, is in condition for allowance.

Claim 23 depends from claim 22, and includes all of the limitations of claim 22. Applicant submits that claim 23 is allowable for that reason alone. Further, however, Applicant submits that claim 23 is separately allowable over the teaching of Klungness et al. Claim 23 recites controlling at least one of temperature and pressure of the reactant gas, pH of the suspension, and exposure time to selectively determine the crystal type of calcium carbonate formed. Nothing in Klungness et al. teaches or suggests controlling such parameters to selectively determine the type of calcium carbonate crystal formed and loaded into the fibers. Claim 23 should be allowed based on the limitations recited therein, which are not taught or suggested by Klungness et al.

For the foregoing reasons, Applicant submits that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicant respectfully requests withdrawal of all rejections and allowance of the claims.

In the event Applicant has overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicant hereby conditionally

petitions therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,

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June 30, 2004
Date